PSYCHOMETRIC ASSESSMENT OF NATIONAL AND INTERNATIONAL LEVEL PUGILISTS IN SELECTED COGNITIVE AND DEVELOPMENTAL AREAS

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CHAPTER 1

INTRODUCTION

THEME OF THE STUDY

In the highly competitive arena of pugilism, the factors that differentiate national from international pugilists extend beyond physical prowess and technical skill. This study aims to explore the cognitive and developmental characteristics that contribute to the success of elite pugilists. By identifying the psychological and developmental attributes that correlate with high performance, we can better understand the holistic needs of pugilists. This research will provide valuable insights for coaches, trainers, and sports psychologists to enhance training programs, foster talent development, and ultimately support the aspirations of pugilists striving for excellence.

Cognitive Psychology

Cognitive psychology is a branch of psychology that explores the internal mental processes involved in acquiring knowledge and understanding. It focuses on how people perceive, think, remember, and learn. By examining the complex mechanisms of the human mind, cognitive psychologists seek to understand how individuals process information from the environment and how this processing influences their behavior. This field encompasses a range of cognitive functions including attention, memory, problem-solving, language acquisition, and decision-making. Cognitive psychology integrates theoretical perspectives and empirical research methods to investigate the intricacies of mental functions and their impacts on human behavior and development. Through experimental studies and practical applications, cognitive psychology contributes to advancements in educational strategies, therapeutic approaches, and the enhancement of cognitive skills in various domains.

Cognitive development in pugilists refers to the progression and enhancement of their intellectual capabilities and mental processes as they advance in their boxing careers. This development includes crucial mental functions such as strategic thinking, decision-making, problem-solving, memory retention, and the ability to learn and apply new techniques. For pugilists, cognitive development is vital for interpreting opponents' movements, making quick decisions in the ring, and adapting strategies during a match. Factors such as coaching, training environment, and personal experiences significantly influence this cognitive growth. By honing their cognitive skills, pugilists can improve their focus, reaction time, and overall

performance. Understanding the cognitive development specific to athletes in boxing helps in designing targeted training programs that enhance not only their physical prowess but also their mental agility, contributing to their success and longevity in the sport.

These factors include attention, perception, memory, reasoning, problem-solving, and decision-making. Cognitive functions such as these are essential for understanding and interacting with the world and are crucial in contexts requiring high mental acuity, like sports and competitive activities.

Cognitive Aspects

Strategic Thinking and Decision-Making: Boxing is not just a physical battle but also a mental game. Pugilists must develop strategic thinking to anticipate their opponent's moves and make split-second decisions. This involves analyzing patterns, predicting actions, and choosing the best counter-strategy, all under intense physical and psychological pressure.

Attention and Focus: Sustained attention and focus are essential in boxing, where a momentary lapse can result in a significant disadvantage or even injury. Pugilists need to maintain high levels of concentration to execute their techniques effectively and adapt to the rapidly changing dynamics of a match.

Memory and Learning: Cognitive development in boxing also includes the ability to memorize combinations, tactics, and opponent tendencies. Learning from past matches, both victories, and defeats, is vital for continuous improvement. This learning process is enhanced by cognitive functions such as long-term memory and procedural memory.

Developmental Psychology

Developmental psychology focuses on the changes that occur throughout a person's lifespan, from infancy through adulthood. In the context of pugilists, this field examines how various stages of physical, cognitive, and emotional development influence their performance, training, and overall career progression.

Understanding the stages of development in pugilists helps in designing tailored training programs and support systems that enhance their physical, cognitive, and emotional growth throughout their careers. By addressing the unique needs at each developmental stage, pugilists can achieve optimal performance and longevity in the sport.

Anxiety and Aggression: Anxiety and aggression can be considered significant developmental aspects, especially in the context of athletic performance. These psychological factors evolve as athlete's progress through various stages of their careers, influencing and being influenced by their experiences and training environments. For example, anxiety, which can manifest as performance anxiety or fear of failure, often fluctuates with an athlete's level of experience and confidence. Early in their careers, athletes may experience higher levels of anxiety due to the novelty of competition and the pressure to perform. Similarly, aggression, which can be channeled positively to enhance competitiveness and drive, develops as athletes learn to manage their emotions and utilize their intensity effectively. The ability to harness aggression constructively often improves with experience and psychological training, making it a critical aspect of athletic development. Thus, anxiety and aggression are not static traits but dynamic components that evolve through an athlete's developmental journey, significantly impacting their performance and psychological growth.

The interplay between cognitive and developmental factors is evident in the holistic training programs designed for pugilists. These programs not only focus on physical conditioning and technical skills but also incorporate mental training, such as visualization techniques, cognitive behavioral strategies, and stress management practices. By addressing both cognitive and developmental aspects, trainers and coaches can better prepare pugilists for the challenges of high-level competition.

Impact on Performance

The integration of cognitive and developmental factors directly impacts a pugilist's performance. Enhanced cognitive abilities such as quick decision-making, strategic planning, and the ability to stay focused can give pugilists an edge over their opponents. Meanwhile, well-developed motor skills, emotional resilience, and a strong social support system contribute to overall athletic excellence and longevity in the sport.

As boxing continues to grow in popularity and prestige, understanding the cognitive and developmental aspects that contribute to an athlete's success becomes increasingly important. These factors are integral to not only achieving peak performance but also ensuring the well-being and sustained careers of pugilists. Future research and training methodologies will benefit from a comprehensive approach that considers the multifaceted nature of cognitive and developmental growth in the sport.

DEFINITION AND EXPLANATION OF TERMS

- **Cognitive Abilities**: Mental capabilities such as learning, thinking, reasoning, problem-solving, memory, and attention.
- **Developmental Milestones**: Key physical, emotional, and psychological markers of development.
- **Pugilist**: A boxer, particularly one who participates in competitive boxing.
- **International Level Sports**: Sports competitions where athletes from multiple countries participate, such as the Olympics, World Championships, Asian games, etc.
- **National Level Sports**: Sports competitions held within nation, where athletes from various regions or states compete.

STATEMENT OF THE PROBLEM

"PSYCHOMETRIC ASSESSMENT OF NATIONAL AND INTERNATIONAL LEVEL PUGILISTS IN SELECTED COGNITIVE AND DEVELOPMENTAL AREAS"

RESEARCH QUESTIONS

This study will address the following research questions:

- What is cognitive levels of national and international pugilists?
- What is developmental levels of national and international pugilists?
- How do cognitive milestones differ between these two groups?
- How do developmental milestones differ between these two groups?

OBJECTIVES OF THE STUDY

- To test the self-perception of national and international level pugilists using a self-perception scale.
- To exhibit the self-perception profile of the respondents.
- To test the decision-making style of national and international level pugilists using a decision-making style inventory.
- To exhibit the decision-making style profile of the respondents.

- To test the anxiety levels of national and international level pugilists using an anxiety scale.
- To exhibit the anxiety profile of the respondents.
- To test the aggression levels of national and international level pugilists using an aggression scale.
- To exhibit the aggression profile of the respondents.
- To compare the self-perception scores of national and international level pugilists using t-tests.
- To compare the decision-making style scores of national and international level pugilists using t-tests.
- To compare the anxiety levels of national and international level pugilists using t-tests.
- To compare the aggression levels of national and international level pugilists using t-tests.

HYPOTHESES

For the fair functioning of the study, the following hypotheses have been formulated:

i. It is hypothesized that there will be no significant difference in the level of self-perception between national and international level pugilists.

ii. It is hypothesized that there will be no significant difference in the decision-making style between national and international level pugilists.

iii. It is hypothesized that there will be no significant difference in the level of anxiety between national and international level pugilists.

iv. It is hypothesized that there will be no significant difference in the level of aggression between national and international level pugilists.

v. It is hypothesized that self-perception profiles cannot be developed for national level pugilists.

vi. It is hypothesized that self-perception profiles cannot be developed for international level pugilists.

vii. It is hypothesized that decision-making style profiles cannot be developed for national level pugilists.

viii. It is hypothesized that decision-making style profiles cannot be developed for international level pugilists.

ix. It is hypothesized that anxiety profiles cannot be developed for national level pugilists.

x. It is hypothesized that anxiety profiles cannot be developed for international level pugilists.

xi. It is hypothesized that aggression profiles cannot be developed for national level pugilists.

xii. It is hypothesized that aggression profiles cannot be developed for international level pugilists.

DELIMITATIONS

The delimitations of this study are as follows:

- The study will be delimited to pugilists.
- The study will include a total of 40 pugilists from India.
- The sample will be divided equally into two groups: 20 national and 20 international.
- The participants will be limited to ages between 17 and 24 years.
- The study will be delimited to the cognitive factors such as self-perception and decision-making style.
- Further, the study will be delimited to the developmental factors such as anxiety and aggression.

SIGNIFICANCE OF THE STUDY

The present study may be very useful to future researchers and can contribute to society in the following ways:

- The findings of the study may reflect the self-perception levels of national and international level pugilists.

- The findings of the study may reveal the decision-making styles of national and international level pugilists.
- The findings of the study may indicate the anxiety levels and aggression among national and international level pugilists.
- The findings of the study may help coaches develop better training programs by understanding the cognitive and developmental differences between national and international pugilists.
- The findings of the study may assist higher authorities in recognizing the importance of addressing cognitive factors such as self-perception and decision-making styles, and developmental factors such as anxiety and aggression in training programs.
- The findings of the study may help pugilists take initiatives to manage their self-perception, decision-making skills, anxiety, and aggression effectively.
- The study may help coaches and sports psychologists develop interventions to address personal and interpersonal problems related to mental health and aggression in athletes.
- Some specific elements of cognitive development, such as decision-making styles, may improve the ability of athletes to use logic to solve problems, plan, and strategize by understanding abstract ideas.
- The study may help improve crystallized cognitive abilities and the management of anxiety and aggression among pugilists.

This study will be helpful in determining the cognitive and developmental differences between national and international level pugilists, which may be an initiative for further studies regarding these components. Also, this study will be helpful in the development of psychological profiles based on self-perception, decision-making styles, anxiety, and aggression.

CHAPTER – II

REVIEW OF LITERATURE

Efe, Mehmet. (2023). This research was conducted with the aim of examining the physical self-perceptions of individuals with physical disabilities and their motivation to participate in sports. Data were collected from a total of 459 physically disabled individuals, 280 males, and 179 females, using the "Personal Demographic Information Form", the "Physical Self-Perception for Children and Young People (CY-PSPP) Inventory" developed by Whitehead (1995), and the "Motivation Scale for Sports Participation in Disabled Individuals" developed by Tekkurşun (2018). In the research, the T-Test and One-Way ANOVA analysis were used to determine the differences between demographic variables, the Post-Hoc Tukey test was used to determine the differences between groups, and Pearson Product Moment Correlation analysis was used to determine the relationships between variables. When sports participation motivation is examined by gender, it was found that there was no statistically significant difference in the intrinsic and extrinsic motivation sub-dimensions; It was determined that there was a statistically significant difference in the amotivation sub-dimension. According to the disability type variable, there was no statistically significant difference in the physical strength sub-dimension; It was determined that there was a statistically significant difference in the sub-dimensions of general self, physical self, physical condition, sports competence and physical attractiveness. When physical self-perception was examined according to gender variable, it was found that there was no statistically significant difference in the sub-dimensions of general self, physical attractiveness, and physical strength; It was determined that there was a statistically significant difference in the sub-dimensions of physical self, physical condition and sports competence. According to the disability type variable, there was no statistically significant difference in the physical strength sub-dimension; It was determined that there was a statistically significant difference in the sub-dimensions of general self, physical self, physical condition, sports competence and physical attractiveness. Again, age and active sports variables were examined in our research, and different results were obtained in their sub-dimensions. If disabled individuals are provided with a closer bond to society through sports, they will have a stronger physical self-perception and increase their motivation to participate in sports.

Godbout, Paul. (2023) In physical education (PE), reflection on action is usually referred to in relation with pedagogical approaches such as experiential learning, constructivism and social

constructivism. In organization systems, sensemaking has been discussed in relation with situation awareness (SA), a construct closely related not only to decision making but to understanding as well. In recent years, researchers interested in decision making in high-level sport performance have taken an interest in SA. The purpose of this explanatory article is to examine the applicability of the SA construct, including its related DM and sensemaking processes, to the teaching/learning and performing of diverse categories of physical activities such as sports, dance, fitness activities, outdoor activities and leisure activities in general. In a first section, the author distinguishes two types of SA, current SA and reflected SA, in relation with reflection in action and reflection on action. With regard to the involvement of one or several individuals, three SA facets are suggested: primary SA, distributed SA, and socially shared SA. Following a short discussion on the relationship between SA and the data/frame theory, the author examines the process of framing physical activities in view of situation awareness. Finally, the metacognitive side of framing and situation awareness is briefly discussed in terms of individuals who come to select particular observational cues that work better for them. Keywords: situation awareness, data/frame theory, sensemaking, decision making, frame building

Morano, Milena & Robazza, Claudio & Ruiz, Montse & Bortoli, Laura. (2022) Adolescence is characterized by pubertal physical changes, cognitive development, and modified social expectations. Adolescent athletes often enter a more challenging stage of athletic development associated with increased specialization, and become vulnerable to feelings of burnout. It is therefore important to consider intrapersonal psychological factors that can improve sport participation experiences and prevent burnout. Accordingly, the aim of the current study was to examine the interplay between self-perceptions and emotion-related (i.e., psychobiosocial) experiences (e.g., feeling confident, focused, determined, physically charged, and skillful) in predicting burnout symptoms in adolescents. A sample of 12–14-year-olds (n = 338, 176 girls and 162 boys; Mage = 13.42, SD = 1.12) and 15–17-year-olds (n = 302, 142 girls and 160 boys; Mage = 15.78, SD = 1.17), participating in individual or team sports, were involved in a cross-sectional study to assess positive and negative self-perceptions, functional and dysfunctional psychobiosocial experiences, and burnout symptoms (i.e., emotional and physical exhaustion, reduced sense of accomplishment, sport devaluation). Path analysis results suggest that higher scores on global physical self-perception, self-esteem, and sport competence were associated with lower burnout symptoms, while higher scores on social physique anxiety were associated with higher scores on sport devaluation. Moreover, self-

esteem and sport competence were shown to have significant indirect effects on burnout dimensions via functional psychobiosocial experiences. Differences by gender ($p < .001$) and by age category ($p < .001$) in the variable scores were also found. Compared to girls, boys reported higher scores on competence, functional psychobiosocial experiences, global physical self-perception, self-esteem, emotional and physical exhaustion, and lower scores on social physique anxiety. Compared to 12–14-year-olds, 15–17-year-olds reported lower scores on global physical self-perception and self-esteem, and higher scores on social physique anxiety, reduced sense of accomplishment, and sport devaluation. This study adds to the literature on burnout by considering the role of intrapersonal factors (i.e., global physical self-perception, self-esteem, sport competence, and social anxiety) in predicting burnout symptoms in adolescent athletes, and the mediating effects of psychobiosocial experiences. From an applied perspective, sport coaches should implement strategies to foster positive self-perceptions, promote pleasant psychobiosocial experiences, and prevent burnout.

Ashford, Michael et al. (2021) Three perspectives were taken to explain decision-making within team sports (information processing, recognition primed decision-making, and ecological dynamics perspectives), resulting in conceptual tension and practical confusion. The aim of this paper was to interrogate empirical evidence to (1) understand the process of decision-making within team sports and (2) capture the characteristics of decision-making expertise in a team sport context. Nine electronic databases (SPORTDiscus, PsycINFO, PsycArticles, PsycTests, PubMed, SAGE journals online,Web of Knowledge, Academic Search Complete, and Web of Science) were searched until the final return in March 2021. Fifty-three articles satisfied the inclusion criteria, were analysed thematically, and synthesised using a narrative approach. Findings indicate that the relative absence or presence of mental representation within the decision-making process depends on factors, including complexity, typicality, time available, and contextual priors available in the game situation. We recommend that future research integrate concepts and methodologies prevalent within each perspective to better understand decision-making within team sports before providing implications for practitioners.

Ashford, Michael & Abraham, Andy & Poolton, Jamie. (2020) Invasion team sports coaches are faced with the problem of developing players that in any given situation can make decisions that lead to successful outcomes. Research into human decision-making has established three widely accepted perspectives, which sports coaching has used to understand player decision-making and inform practice; information processing, ecological psychology

and naturalistic decision-making. As a result, coaches are challenged with perspective-specific terminology and having to draw connections amongst similar findings that are explained in quite different ways. This conceptual paper presents a plainer account of player decision-making by proposing a communal language within a conceptual framework for decision-making in invasion team sports. It is hoped that the proposed language and framework will together facilitate knowledge exchange between researchers and coaches for the betterment of player development.

Corrêa, Umberto et al. (2020) This study investigated how futsal players deal visually with information in interpersonal coordination scenarios when making decisions on shooting. The sample consisted of thirty-two sequences of play, ranging from 0.36 to 5.28 seconds in length, in which 32 experienced players – men (M = 19.36, SD = 1.32) – performed a shot wearing Tobii Glasses 2 eye-tracking, across 18 futsal games. Relative angles formed by the interaction of a shooter to the defender closest to him/her and the goalkeeper were used to capture interpersonal coordination for shooting. Variability in visual search was calculated on the basis of the number of times "quiet eyes" changed over the course of the sequence of play. The results showed that variabilities in the third (2.80) and fourth (5.37) quartiles of ball possession time were higher than those of the first (1.55) and second (1.70) quartiles. They also revealed that variabilities in visual search did not differ in relation to the magnitude, velocity and variability of the relative angles. It was concluded that the longer the ball possession time, the greater the variability in visual search. It would appear that through visual search, players look for the same – optimal – angular interpersonal relationship.

Morano, Milena et al. (2020) Youth sport experience provides opportunities for physical, personal, and social development in youngsters. Sport is a social system in which socially constructed gender differences and stereotypes are incorporated, and specific sport activities are often perceived as gender characterized. The objective of this study was to examine the relationship between some salient physical and emotional self-perceptions and the type of sport practiced. A sample of 261 female athletes, aged 14–21 years (Mage = 15.59, SD = 2.00), practicing different sports, categorized as feminine (e.g., artistic and rhythmic gymnastics), masculine (e.g., soccer and rugby), or neutral (e.g., track and field and tennis), took part in a cross-sectional study. Significant differences were observed between aesthetic sports and other types of sports. Athletes involved in aesthetic sports reported the lowest values in their feelings of confidence and the highest values in feelings of worry related to competition. This may be attributed to the evaluation system of aesthetic sports, in which the athlete's performance is

evaluated by a jury. At the same time, they reported low values of dysfunctional psychobiosocial states associated with their general sport experience, likely because of their physical appearance close to the current body social standards for girls. Notwithstanding the differences by type of sport, athletes of all disciplines reported high mean values of functional psychobiosocial states, suggesting that their overall sporting experience was good.

Alejo, Andres et al. (2020) Pre-competitive anxiety is one of the psychological factors that can greatly influence athletes' performance, especially when it comes to individual sport like boxing. To analyze the level of pre-competitive anxiety in male athletes in the adult and young adult categories, and their correlation with the final results of the last Brazilian National Championship. A total of 60 young adult athletes participated in the study: 38 non-medalists (17.17±0.54 years and 66.38±13.21 kg) and 22 medalists (17.48±0.54 years and 66.21±12.96 kg). The “adults” group consisted of 35 athletes: 11 non-medalists (22.60±4.65 years and 68.33±14.08 kg) and 24 medalists (22.60±4.82 years and 67.33 ±13.13 kg). The levels of cognitive anxiety in the young adult athletes group presented significant differences: medalists presented lower scores than non-medalists (12.77±2.62 and 15.92±5.20, respectively). In the adults group, medalists presented higher scores than non-medalists (15.23±4.42 and 12.00±4.11). Significant differences were observed in somatic anxiety levels between the young adult medalists and the other groups ($p = 0.038$). In addition, levels of self-confidence were high in all groups (young adult non-medalists = 29.42±4.82; adult non-medalists = 26.14±4.94, young adult medalists = 31.59±4.24 and adult medalists = 28.91±4.88). We conclude that self-confidence may interfere with anxiety levels, considering that medal-winning boxers are less prone to cognitive anxiety than non-medalists, and that both groups have high levels of self-confidence. Level of evidence I; High quality randomized trial with statistically significant difference or no statistically significant difference but narrow confidence intervals.

Zureigat, Ayed & Fattah, Osama. (2019) The aim of this study was to identify the level of emotional intelligence and aggression in the Jordanian team of players, as well as the relationship of emotional intelligence level of aggressive behavior in the study sample. To achieve this, the researchers used the descriptive method on a sample consisting of (30) boxers representing the Jordanian team. The sample of the study constituted 85.7% of the study population. In order to obtain the study data, the researchers used a questionnaire designed by Al-Sayed and Abdel-Samiea (2002) to measure the level of emotional intelligence and a questionnaire designed by Allawi (1998) to measure the level of aggression. The researchers

used the following statistical treatments: arithmetical averages and standard deviations, Alpha Cronbach equation and Pearson test. The results of the study showed that the level of emotional intelligence in the sample of the study was (3.49) and the middle degree, while the level of aggression (3.74) and high degree, and there is a relationship of negative correlation between the statistical level of emotional intelligence and aggression. The researchers recommend attention interesting to the psychological aspects of boxing players.

Klatt, Stefanie et al. (2019) The concepts of creativity and intuition have been well studied in isolation, but less is known about their distinctive contributions to option generation in decision making. Method: We examined the relation between creative and intuitive decision making in two studies—one involving coaches and one involving soccer players—using video footage of real soccer matches. Additionally, we analyzed whether this relation is culture generic or culture specific by conducting matched cross-cultural studies in a European and a South American country. Results: In Study 1, results indicate a conceptual overlap of creativity and intuition for Brazilian and German soccer coaches. Furthermore, coaches did not differ in their evaluation of creative and intuitive actions of players of both cultures. In Study 2, we found that for both subsamples the total number of generated options was positively correlated with the quality of the first and the final option and that the quality of players' first (intuitive) option was higher than that of options generated later. Moreover, results indicate a positive correlation between a player's creativity score and the quality of the first generated option for the whole sample. Conclusion: Overall, our findings provide meaningful information regarding athletes' and coaches' option-generation processes in decision making in complex team sports.

Sabiston, Catherine & Gilchrist, Jenna & Brunet, Jennifer. (2018) Self-perceptions can be defined as the way that people think about their traits, beliefs, roles, identities, and descriptions. In this chapter, we present an overview of existing work on the multidimensional and hierarchical structure of the self. Within the context of sport and exercise, the physical self and related physical self-perceptions are the primary focus of attention. Specifically, sport and exercise situations provide opportunity for the development and evaluation of the self and a forum for the physical self to be on display and judged by others. Competing theories exploring the development of the self and the way in which the self relates to outcomes such as physical activity are discussed. An integrative perspective is presented pertaining to the associations within the self-perception system and the way in which the self relates to engagement in, or avoidance of, physical activity. Limitations of existing work are highlighted throughout the

chapter, and suggestions for future research are identified and discussed to inform theory, research, and practice.

Baba Kaya, Hande et al. (2017) Emotional Quotient is defined as the ability to perceive, use, manage and understand the emotions, which is associated with the better psychological adjustment. Analyzing studies in the literature, an inverse relationship was observed between emotional quotient and aggressive behavior. Therefore, The relationship between emotional quotient and aggression were analyzed Pearson product moment correlation coefficients. The function of emotional intelligence explanation for aggression was tested by stepwise multiple regression analysis. According to findings of the research have meaningful negative relationship between aggression and all dimensions of the emotional quotient. In addition, coping with stress and interpersonal relationships significant size aggression scores (R2 = .26, F (2,197) = 34,252, p <.001) were found to explain. As a result, boxer aggression in terms of emotional intelligence can be expressed as a factor.

Zheng, Yingying & Zhou, Yiyi & Lai, Qiujia. (2015) The aim of the current study was to observe the effects of Twenty-four Move Shadow Boxing combined with psychosomatic relaxation on depression and anxiety in patients with Type-2 Diabetes.

One hundred and twenty (120) patients with Type-2 Diabetes and depressive/anxious symptoms were divided into intervention group (60 cases) and control group (60 cases) according to the minimum distribution principle of unbalanced indicators. Twenty-four Move Shadow Boxing group used this intervention combined with psychosomatic relaxation. Control group underwent conventional treatment. All the patients in the two groups completed the Self-rating Depression Scale (SDS) and Self-Rating Anxiety Scale (SAS) before and after treatment.

Among the 52 people included in the statistical analysis, the recovery rate was 13.3%. The differences between depression and anxiety scores in the intervention group before and after treatment were statistically significant (P<0.001), whereas these differences were non-significant in the control group (P=0.123). After the treatment, the glycated hemoglobin reduction in the intervention group was greater than that of the control group (t=2.438, P=0.016). The combination of Twenty-four Move Shadow Boxing and psychosomatic relaxation has a beneficial auxiliary therapeutic effect on depression and anxiety accompanying Type-2 Diabetes.

Mosler, Dariusz. (2015). In training practice, too little attention is paid to association between objective indicators of phenomena, which measures incentives and training effects with

subjective sensations of trained persons. The aim of this study is knowledge about relationships between subjective feelings of athletes use different non-apparatus and quasi apparatus flexibility tests and objective results of this tests in three situations judo training. Eight male subjects were examined during 3 judo recreation training sessions: age ranged from 18 to 43 years (mean 28.8 ±8.5); training experience ranged from 0.5 to 3 years (mean 1.4 year). In assessment, three flexibility tests were used each time in three different training situations, switching the order of their usage: FED, SABS, SASRT. For evaluation of their opinion about test, they were asked to put scores ranged from 1 to 5 for five indicators (feature's rating): F1 – comfort of test; F2 – perception of security; F3 – compatibility with own perception of flexibility; F4 – precision of assessment; F5 – toleration of negative feelings from different parts of body. Only SASRT's (self-assessment sit reach test) test where rated lowest ratings had significant correlations between two features and resting state of the body. Especially indicators F2 and F4 during assessment SASRT and SABS (modified measurement of finger-floor distance – self-assessment Bending scale) suggests relations between subjective discomfort sensations of training participants with real state of body stimulation and generating unwanted muscle stiffness during exercises for specific training session stage. Simultaneous application of SASRT and self-perception scale are simple tools for diagnosing flexibility in different states of body stimulation and direct assumptions about generating unwanted muscle stiffness during exercises (randori) before assessment.

Gronek, Piotr & Wieliński, Dariusz & Gronek, Joanna. (2014) Human aggression/impulsivity-related traits are influenced by complex genetic and non-genetic factors. The aggression/anxiety relationship is controlled by highly conserved brain regions including the amygdala, hypothalamus and periaqueductal gray of the midbrain, which is responsible for neural circuits triggering defensive, aggressive, or avoidant behavioral models. The social behavior network consists of the medial amygdala, medial hypothalamus and periaqueductal gray, and it positively modulates reactive aggression. An important role in the incidence of aggressive behavior is played by secreted factors such as testosterone, glucocorticoids, pheromones, as well as by expression of genes such as neuroligin-2, monoamine oxidase A, serotonin transporters, etc. The authors deliberate whether aggression in sport is advantageous (or even indispensable), or to what extent it can hamper attainment of sport success. Methods of reducing and inhibiting expression of aggression in athletes are indicated

Giorgetta, Cinzia et al. (2012) Affect can have a significant influence on decision-making processes and subsequent choice. One particularly relevant type of negative affect is anxiety, which serves to enhance responses to threatening stimuli or situations. In its exaggerated form, it can lead to psychiatric disorders, with detrimental consequences for quality of life, including the ability to make choices. This study investigated, for the first time, how pathological anxiety affects risk-taking behavior. In this study, 20 anxious participants meeting Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, criteria for either generalized anxiety disorder (n = 10) and for panic attack disorder (n = 10), as well as 20 matched nonanxious controls, performed a gambling task. To investigate the tendency toward either a risk-seeking or a risk-averse behavior, we employed a task that did not allow for learning from outcomes. Anxious participants made significantly fewer risky choices than matched nonanxious participants. Specifically, they become risk-avoidant after gains. Moreover, anxious participants not only were less happy after gains but were also less sad after losses, and they also evinced less desire to change their choices after losses than did nonanxious participants. Importantly, whereas the desire to switch choice was followed by actual choice switch for all participants, happiness directly predicted subsequent risky choices, particularly in the nonanxious participants. Further analyses revealed that the anxious participants' risk-avoidance behavior was independent of different types of anxiety disorder (panic attack disorder and generalized anxiety disorder) as well as of the effects of psychotropic drugs treatment. This study demonstrates a specific role for anxiety in individual decision making. In particular, hypersensitivity to potential threats and pessimistic evaluation of future events reduced risk-taking behavior.

DeWall, C et al. (2010) Social anxiety is marked by viewing social interactions as competitive, hypervigilance to signs of social threat, and avoidance of interactions that may result in social rejection. Therefore, social anxiety should relate to: (1) greater hostile feelings toward others, (2) heightened perceptions of hostility in others, and (3) relatively low levels of violence and aggression. To date, however, little is known about these relationships. In four independent non-clinical samples (total N=2643), we examined relationships between social anxiety, hostility, and aggression using a range of measures that included both self-report and behavioral assessments. In Study 1, social anxiety correlated positively with feeling hostile toward others. In Study 2, social anxiety correlated positively with hostile perceptions of others. In Study 3, social anxiety was related to less positive attitudes toward behaving violently toward one's relationship partner. In Study 4, social anxiety was related to less aggressive behavior, as

indicated by less intense and prolonged noise blasts delivered to a fictitious opponent. Taken together, these four studies paint a picture of socially anxious people as bracing for the worst by feeling and perceiving hostility in the social environment, but behaving the best by refraining from aggression and violence.

Sysoeva, Olga et al. (2008) Aggression is a heterogeneous heritable psychological trait, also influenced by environmental factors. Previous studies, mostly conducted on male population, have found some associations of the aggression with the polymorphisms of genes, regulating the activity of serotonin (5-HT) in the brain. However, psychological as well as biochemical manifestations of the aggression are different in males and females. Our study aimed to investigate the association of 5-HTT gene polymorphism with different facets of aggression (BDHI) in females. Two groups: the synchronized swimming and non-athlete control, — were examined to study the possible modulation effect of sport on the association between 5-HTT gene polymorphism and aggression. It was found that in both groups the low-active 5-HTT polymorphism (SS) was associated with increased scores on Indirect Hostility scale and decreased scores on Negativism scale, compared to LL genotype. No interaction effect between sport and 5-HTT polymorphism was found. The higher percentage of LL-carriers and lower of LS-carriers in the synchronized swimming group compared to the control one was observed. This may be the sign of the importance of LL polymorphism of 5-HTT gene, previously associated with higher resistance to stress factors, for being an athlete, although this result has to be taken cautiously keeping in mind the stratification problem. Synchronized swimmers had lower scores on Assault, Negativism, Irritability and Verbal Hostility compared to age-matched control girls (in general and for each 5-HTT genotype separately), suggesting that they may have more matured emotional system (older control group has also lower scores on these scales).

CHAPTER 3

METHODOLOGY AND PROCEDURE

The purpose of this study is to determine the cognitive and developmental differences between national and international level pugilists in India, aged 17-24 years. The study aims to find out whether there are significant differences in self-perception, decision-making styles, anxiety levels, and aggression between these two groups, and to develop profiles based on these variables. In this chapter, the design of the study, selection of subjects, selection of variables, selection of tools, description and administration of tests, and statistical procedures are discussed in detail.

SELECTION OF SUBJECTS

For the purpose of this study, the subjects will be selected using purposive sampling. A total of 40 pugilists, comprising 20 national and 20 international, will be selected from various boxing training centers, national and international competitions in India. This method ensures that the sample includes individuals who meet specific criteria relevant to the research objectives. To ensure that the selection is fair and representative, the researcher will collaborate with national boxing federations and training centers to identify eligible participants who meet the criteria of age (17-24 years) and competitive level (national and international). The purposive sampling method ensures that every subject selected has the necessary experience and background for the study, thereby maximizing the internal and external validity of the research.

SELECTION OF VARIABLES

In this study, the following variables have been selected to examine the cognitive and developmental differences between national and international level pugilists. The variables are categorized as independent and dependent variables to structure the analysis effectively.

Dependent Variables

I. Self-Perception:
   - Self-Regard
   - Self-Acceptance

II. Decision-Making Styles:
   - Rational Decision-Making

- Confidential Decision-Making
- Dependent Decision-Making
- Avoidant Decision-Making
- Intuitive Decision-Making

III. Anxiety:

- Worry
- General Anxiety
- Low Self-Confidence
- Overthinking
- Panic Attacks
- Depression

IV. Aggression

Independent Variables

- Pugilists (National and International)

SELECTION OF TOOLS

Cognitive Assessment Tools:

- **Self-Perception Measuring Scale (SPMS-A) by K. G. Agarwal**
  - The SPMS-A is a self-assessment tool designed to evaluate self-perception in adults. This scale consists of 40 items and measures two key dimensions of self-perception:
    - Self-Regard
    - Self-Acceptance
- **Decision Making Style (DMS) by Sarla Rani and Sonu Rani**

- The DMS is an assessment tool designed to evaluate different decision-making styles among individuals. This scale consists of 35 items divided into five subscales:
  - Rational Decision-Making
  - Confidential Decision-Making
  - Dependent Decision-Making
  - Avoidant Decision-Making
  - Intuitive Decision-Making

Developmental Assessment Tools:

- **Anxiety Scale (AS–SSDG) by Subhash Sarkar and Goutam Das**
  - The AS-SSDG is an assessment tool designed to evaluate anxiety levels in individuals. This scale consists of 48 items divided into six dimensions:
    - Worry
    - General Anxiety
    - Low Self-Confidence
    - Overthinking
    - Panic Attacks
    - Depression
- **Aggression Scale by R. L. Bhardwaj**
  - The Aggression Scale by R. L. Bhardwaj is an assessment tool designed to measure levels of aggression in individuals. This scale consists of 28 items and was administered to individuals aged 10 and above. The tool is valuable for both educational and research purposes, offering insights into the aggressive behaviors and tendencies of individuals.

STATISTICAL PROCEDURE

The present study is descriptive and comparative in nature. To provide statistical authenticity to the findings of this study, descriptive statistics and t-tests will be applied in the following manner:

- Descriptive statistics will be applied to develop the profile of self-perception (self-regard and self-acceptance) of national and international level pugilists.
- Descriptive statistics will be used to develop the profile of decision-making styles (rational, confident, dependent, avoidant, and intuitive) of national and international level pugilists.
- Descriptive statistics will be used to develop the profile of anxiety (worry, general anxiety, low self-confidence, overthinking, panic attacks, and depression) of national and international level pugilists.
- Descriptive statistics will be used to develop the profile of aggression of national and international level pugilists.
- An independent sample t-test will be applied to determine if there is a significant difference in the level of self-perception between national and international level pugilists.
- An independent sample t-test will be applied to determine if there is a significant difference in the decision-making styles between national and international level pugilists.
- An independent sample t-test will be applied to determine if there is a significant difference in the level of anxiety between national and international level pugilists.
- An independent sample t-test will be applied to determine if there is a significant difference in the level of aggression between national and international level pugilists.

All the statistical analysis will be conducted with the help of SPSS software version 23. For all statistical analyses, the level of significance will be set at 0.05.

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DEPARTMENT OF SPORT PSYCHOLOGY

CERTIFICATE

I hereby declare that the short synopsis "PSYCHOMETRIC ASSESSMENT OF NATIONAL AND INTERNATIONAL LEVEL PUGILISTS IN SELECTED COGNITIVE AND DEVELOPMENTAL AREAS" being submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in Physical Education under the department of Sport Psychology of Lakshmibai National Institute of Physical Education, Gwalior, during the academic year 2023-2024.

It is a bonafide record of original work carried out under the supervision of Dr. Bharta Verma and has not been submitted in full or part to any other university or institute for a degree or diploma.

13/05/2025

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